

110TH CONGRESS
1ST SESSION

H. R. 2698

To authorize appropriations for the civil aviation research and development projects and activities of the Federal Aviation Administration, and for other purposes.

IN THE HOUSE OF REPRESENTATIVES

JUNE 13, 2007

Mr. UDALL of Colorado (for himself and Mr. GORDON of Tennessee) introduced the following bill; which was referred to the Committee on Science and Technology

A BILL

To authorize appropriations for the civil aviation research and development projects and activities of the Federal Aviation Administration, and for other purposes.

1 *Be it enacted by the Senate and House of Representa-*
2 *tives of the United States of America in Congress assembled,*

3 **SECTION 1. SHORT TITLE.**

4 This Act may be cited as the “Federal Aviation Re-
5 search and Development Reauthorization Act of 2007”.

6 **SEC. 2. DEFINITIONS.**

7 As used in this Act—

8 (1) the term “Administrator” means the Ad-
9 ministrator of the Federal Aviation Administration;

1 (2) the term “Director” means the Director of
2 the Joint Planning and Development Office;

3 (3) the term “FAA” means the Federal Avia-
4 tion Administration;

5 (4) the term “NASA” means the National Aer-
6 onautics and Space Administration;

7 (5) the term “National Research Council”
8 means the National Research Council of the Na-
9 tional Academies of Science and Engineering;

10 (6) the term “NOAA” means the National Oce-
11 anic and Atmospheric Administration;

12 (7) the term “NSF” means the National
13 Science Foundation;

14 (8) the term “Office” means the Next Genera-
15 tion Air Transportation System Joint Planning and
16 Development Office; and

17 (9) the term “Secretary” means the Secretary
18 of Transportation.

19 **SEC. 3. AUTHORIZATION OF APPROPRIATIONS.**

20 Section 48102(a) of title 49, United States Code, is
21 amended—

22 (1) in paragraph (11)(L), by striking “and”;

23 (2) in paragraph (12)(L), by striking the period
24 and inserting a semicolon; and

1 (3) by adding at the end the following new
2 paragraphs:

3 “(13) for fiscal year 2008, \$335,191,000, in-
4 cluding—

5 “(A) \$7,350,000 for fire research and safe-
6 ty;

7 “(B) \$4,086,000 for propulsion and fuel
8 systems;

9 “(C) \$2,713,000 for advanced materials
10 and structural safety;

11 “(D) \$3,574,000 for atmospheric hazards
12 and digital system safety;

13 “(E) \$14,931,000 for aging aircraft;

14 “(F) \$2,202,000 for aircraft catastrophic
15 failure prevention research;

16 “(G) \$14,651,000 for flightdeck mainte-
17 nance, system integration, and human factors;

18 “(H) \$9,517,000 for aviation safety risk
19 analysis;

20 “(I) \$15,254,000 for air traffic control,
21 technical operations, and human factors;

22 “(J) \$6,780,000 for aeromedical research;

23 “(K) \$19,888,000 for weather programs;

24 “(L) \$6,310,000 for unmanned aircraft
25 systems research;

1 “(M) \$18,100,000 for the Next Generation
2 Air Transportation System Joint Planning and
3 Development Office;

4 “(N) \$13,755,000 for wake turbulence;

5 “(O) \$20,469,000 for environment and en-
6 ergy;

7 “(P) \$1,184,000 for system planning and
8 resource management;

9 “(Q) \$3,415,000 for the William J.
10 Hughes Technical Center Laboratory Facility;

11 “(R) \$74,200,000 for the Center for Ad-
12 vanced Aviation System Development;

13 “(S) \$2,000,000 for the Airport Coopera-
14 tive Research Program—capacity;

15 “(T) \$3,000,000 for the Airport Coopera-
16 tive Research Program—environment;

17 “(U) \$5,000,000 for the Airport Coopera-
18 tive Research Program—safety;

19 “(V) \$3,600,000 for GPS civil require-
20 ments;

21 “(W) \$5,000,000 for runway incursion re-
22 duction;

23 “(X) \$6,500,000 for system capacity, plan-
24 ning, and improvement;

1 “(Y) \$3,000,000 for operations concept
2 validation;

3 “(Z) \$1,000,000 for NAS weather require-
4 ments;

5 “(AA) \$4,000,000 for the Airspace Man-
6 agement Lab;

7 “(BB) \$5,000,000 for airspace redesign;

8 “(CC) \$4,000,000 for wind profiling and
9 weather research, Juneau;

10 “(DD) \$1,000,000 for the Local Area
11 Augmentation System (LAAS);

12 “(EE) \$15,000,000 for Safe Flight 21,
13 Alaska Capstone;

14 “(FF) \$20,000,000 for NextGen dem-
15 onstration;

16 “(GG) \$8,907,000 for airports technology
17 research—capacity;

18 “(HH) \$9,805,000 for airports technology
19 research—safety; and

20 “(14) for fiscal year 2009, \$481,554,000, in-
21 cluding—

22 “(A) \$8,457,000 for fire research and safe-
23 ty;

24 “(B) \$4,050,000 for propulsion and fuel
25 systems;

1 “(C) \$2,686,000 for advanced materials
2 and structural safety;

3 “(D) \$3,568,000 for atmospheric hazards
4 and digital system safety;

5 “(E) \$14,683,000 for aging aircraft;

6 “(F) \$2,158,000 for aircraft catastrophic
7 failure prevention research;

8 “(G) \$37,499,000 for flightdeck maintenance,
9 system integration, and human factors;

10 “(H) \$8,349,000 for aviation safety risk
11 analysis;

12 “(I) \$15,323,000 for air traffic control,
13 technical operations, and human factors;

14 “(J) \$6,932,000 for aeromedical research;

15 “(K) \$22,336,000 for weather program;

16 “(L) \$6,738,000 for unmanned aircraft
17 systems research;

18 “(M) \$18,100,000 for the Next Generation
19 Air Transportation System Joint Planning and
20 Development Office;

21 “(N) \$11,560,000 for wake turbulence;

22 “(O) \$35,039,000 for environment and energy;
23 energy;

24 “(P) \$1,847,000 for system planning and
25 resource management;

1 “(Q) \$3,548,000 for the William J.
2 Hughes Technical Center Laboratory Facility;

3 “(R) \$85,000,000 for Center for Advanced
4 Aviation System Development;

5 “(S) \$5,000,000 for the Airport Coopera-
6 tive Research Program—capacity;

7 “(T) \$5,000,000 for the Airport Coopera-
8 tive Research Program—environment;

9 “(U) \$5,000,000 for the Airport Coopera-
10 tive Research Program—safety;

11 “(V) \$3,469,000 for GPS civil require-
12 ments;

13 “(W) \$5,000,000 for runway incursion re-
14 duction;

15 “(X) \$6,500,000 for system capacity, plan-
16 ning and improvement;

17 “(Y) \$3,000,000 for Operations Concept
18 Validation;

19 “(Z) \$1,000,000 for NAS weather require-
20 ments;

21 “(AA) \$4,000,000 for the Airspace Man-
22 agement Lab;

23 “(BB) \$3,000,000 for airspace redesign;

24 “(CC) \$20,000,000 for Safe Flight 21,
25 Alaska Capstone;

1 “(DD) \$12,000,000 for NextGen dem-
2 onstration;

3 “(EE) \$102,000,000 for NextGen system
4 development;

5 “(FF) \$8,907,000 for airports technology
6 research—capacity;

7 “(GG) \$9,805,000 for airports technology
8 research—safety; and

9 “(15) for fiscal year 2010, \$486,502,000, in-
10 cluding—

11 “(A) \$8,546,000 for fire research and safe-
12 ty;

13 “(B) \$4,075,000 for propulsion and fuel
14 systems;

15 “(C) \$2,700,000 for advanced materials
16 and structural safety;

17 “(D) \$3,608,000 for atmospheric hazards
18 and digital system safety;

19 “(E) \$14,688,000 for aging aircraft;

20 “(F) \$2,153,000 for aircraft catastrophic
21 failure prevention research;

22 “(G) \$36,967,000 for flightdeck mainte-
23 nance, system integration, and human factors;

24 “(H) \$8,334,000 for aviation safety risk
25 analysis;

1 “(I) \$15,471,000 for air traffic control,
2 technical operations, and human factors;

3 “(J) \$7,149,000 for aeromedical research;

4 “(K) \$23,286,000 for weather program;

5 “(L) \$6,236,000 for unmanned aircraft
6 systems research;

7 “(M) \$18,100,000 for the Next Generation
8 Air Transportation System Joint Planning and
9 Development Office;

10 “(N) \$11,412,000 for wake turbulence;

11 “(O) \$34,678,000 for environment and en-
12 ergy;

13 “(P) \$1,827,000 for system planning and
14 resource management;

15 “(Q) \$3,644,000 for William J. Hughes
16 Technical Center Laboratory Facility;

17 “(R) \$90,000,000 for the Center for Ad-
18 vanced Aviation System Development;

19 “(S) \$5,000,000 for the Airport Coopera-
20 tive Research Program—capacity;

21 “(T) \$5,000,000 for the Airport Coopera-
22 tive Research Program—environment;

23 “(U) \$5,000,000 for the Airport Coopera-
24 tive Research Program—safety;

1 “(V) \$3,416,000 for GPS civil require-
2 ments;

3 “(W) \$5,000,000 for runway incursion re-
4 duction;

5 “(X) \$6,500,000 for system capacity, plan-
6 ning and improvement;

7 “(Y) \$3,000,000 for operations concept
8 validation;

9 “(Z) \$1,000,000 for NAS weather require-
10 ments;

11 “(AA) \$4,000,000 for the Airspace Man-
12 agement Lab;

13 “(BB) \$3,000,000 for airspace redesign;

14 “(CC) \$20,000,000 for Safe Flight 21,
15 Alaska Capstone;

16 “(DD) \$12,000,000 for NextGen dem-
17 onstration;

18 “(EE) \$102,000,000 for NextGen system
19 development;

20 “(FF) \$8,907,000 for airports technology
21 research—capacity;

22 “(GG) \$9,805,000 for airports technology
23 research—safety; and

24 “(16) for fiscal year 2011, \$514,832,000, in-
25 cluding—

1 “(A) \$8,815,000 for fire research and safe-
2 ty;

3 “(B) \$4,150,000 for propulsion and fuel
4 systems;

5 “(C) \$2,747,000 for advanced materials
6 and structural safety;

7 “(D) \$3,687,000 for atmospheric hazards
8 and digital system safety;

9 “(E) \$14,903,000 for aging aircraft;

10 “(F) \$2,181,000 for aircraft catastrophic
11 failure prevention research;

12 “(G) \$39,245,000 for flightdeck mainte-
13 nance, system integration and human factors;

14 “(H) \$8,446,000 for aviation safety risk
15 analysis;

16 “(I) \$15,715,000 for air traffic control,
17 technical operations, and human factors;

18 “(J) \$7,390,000 for aeromedical research;

19 “(K) \$23,638,000 for weather program;

20 “(L) \$6,295,000 for unmanned aircraft
21 systems research;

22 “(M) \$18,100,000 for the Next Generation
23 Air Transportation System Joint Planning and
24 Development Office;

25 “(N) \$11,471,000 for wake turbulence;

1 “(O) \$34,811,000 for environment and en-
2 ergy;

3 “(P) \$1,836,000 for system planning and
4 resource management;

5 “(Q) \$3,758,000 for William J. Hughes
6 Technical Center Laboratory Facility;

7 “(R) \$114,000,000 for Center for Ad-
8 vanced Aviation System Development;

9 “(S) \$5,000,000 for the Airport Coopera-
10 tive Research Program—capacity;

11 “(T) \$5,000,000 for the Airport Coopera-
12 tive Research Program—environment;

13 “(U) \$5,000,000 for the Airport Coopera-
14 tive Research Program—safety;

15 “(V) \$3,432,000 for GPS civil require-
16 ments;

17 “(W) \$2,000,000 for runway incursion re-
18 duction;

19 “(X) \$6,500,000 for system capacity, plan-
20 ning and improvement;

21 “(Y) \$3,000,000 for operations concept
22 validation;

23 “(Z) \$1,000,000 for NAS weather require-
24 ments;

1 “(AA) \$4,000,000 for the Airspace Man-
2 agement Lab;

3 “(BB) \$3,000,000 for airspace redesign;

4 “(CC) \$20,000,000 for Safe Flight 21,
5 Alaska Capstone;

6 “(DD) \$12,000,000 for NextGen dem-
7 onstration;

8 “(EE) \$105,000,000 for NextGen system
9 development;

10 “(FF) \$8,907,000 for airports technology
11 research—capacity;

12 “(GG) \$9,805,000 for airports technology
13 research—safety; and”.

14 **SEC. 4. NEXT GENERATION AIR TRANSPORTATION SYSTEM**

15 **JOINT PLANNING AND DEVELOPMENT OF-**

16 **FICE.**

17 (a) STATUS OF DIRECTOR AND RESPONSIBILITIES
18 OF OFFICE.—Section 709 of the Vision 100— Century of
19 Aviation Reauthorization Act (49 U.S.C. 40101 note) is
20 amended—

21 (1) in subsection (a)—

22 (A) in paragraph (1), by adding at the end
23 the following: “The head of the Office shall be
24 the Director. The Director shall report to the
25 Administrator of the Federal Aviation Adminis-

1 tration and shall serve as Associate Adminis-
2 trator for the Next Generation Air Transpor-
3 tation System, and shall be a voting member
4 and co-chair of the Joint Resources Council.”;

5 (B) by amending paragraph (2)(C) to
6 read:

7 “(C) creating a transition plan for the im-
8 plementation of that system that includes date-
9 specific milestones for the implementation of
10 new capabilities into the national airspace sys-
11 tem;”;

12 (C) in paragraph (2)(G), by striking “;
13 and” and inserting a semicolon;

14 (D) in paragraph (2)(H), by striking the
15 period at the end and inserting “; and”;

16 (E) by adding at the end of paragraph (2)
17 the following:

18 “(I) establishing specific quantitative goals
19 for the safety, capacity, efficiency, performance,
20 and environmental impacts of each phase of
21 Next Generation Air Transportation System im-
22 plementation activities and measuring actual
23 operational experience against those goals;

1 “(J) working to ensure global interoper-
2 ability of the Next Generation Air Transpor-
3 tation System;

4 “(K) integrating aviation weather informa-
5 tion and space weather information into the
6 Next Generation Air Transportation System as
7 soon as possible;

8 “(L) overseeing, with the Administrator,
9 the selection of products or outcomes of re-
10 search and development activities that would be
11 moved to the next stage of a demonstration
12 project through the Joint Resources Council;

13 “(M) maintaining a baseline modeling and
14 simulation environment for testing and evalu-
15 ating alternative concepts to satisfy Next Gen-
16 eration Air Transportation enterprise architec-
17 ture requirements; and

18 “(N) pursuing the integration of un-
19 manned aircraft systems into the national air-
20 space system through research and demonstra-
21 tion programs under the auspices of a public
22 and private partnership.”; and

23 (2) in subsection (e), by striking “2010” and
24 inserting “2011”.

1 (b) ACCOUNTABILITY.—Such section is further
2 amended—

3 (1) in paragraph (3), by inserting “(A)” after
4 the paragraph designation; and

5 (2) by adding at the end of paragraph (3) the
6 following:

7 “(B) The Administrator, the Secretary of De-
8 fense, the Administrator of NASA, the Secretary of
9 Commerce, the Secretary of Homeland Security, and
10 the head of any other Department or Federal agency
11 from which the Secretary of Transportation requests
12 assistance under paragraph (A) shall designate a
13 senior official in the department or agency to be re-
14 sponsible for—

15 “(i) implementing the department’s or
16 agency’s Next Generation Air Transportation
17 System activities with the Office, including the
18 execution of all aspects of the department’s or
19 agency’s work on developing and implementing
20 the integrated plan described in section
21 709(2)(A); and

22 “(ii) ensuring that the department or
23 agency meets its obligations as set forth in the
24 memorandum of understanding executed by or

1 on behalf of the department or agency under
2 subparagraph (D).

3 “(C) The head of any such department or agen-
4 cy shall—

5 “(i) establish an office within the depart-
6 ment or agency to carry out its responsibilities
7 under the memorandum of understanding under
8 the supervision of the designated official; and

9 “(ii) ensure that the designated official has
10 sufficient budgetary authority and staff re-
11 sources to carry out the department’s or agen-
12 cy’s Next Generation Air Transportation Sys-
13 tem responsibilities as set forth in the inte-
14 grated plan under section 709(b).

15 “(D) Not later than 6 months after the date of
16 enactment of the Federal Aviation Research and De-
17 velopment Reauthorization Act of 2007, the head of
18 each department or agency that has responsibility
19 for carrying out any activity under the integrated
20 plan under section 709(b) shall execute a memo-
21 randum of understanding with the Office obligating
22 that department or agency to carry out those activi-
23 ties.”.

1 (c) INTEGRATED PLAN.—Section 709(b) of the Vi-
2 sion 100—Century of Aviation Reauthorization Act (49
3 U.S.C. 40101 note) is amended—

4 (1) by striking the first sentence and inserting
5 “The integrated plan shall be designed to ensure
6 that the Next Generation Air Transportation System
7 meets anticipated future air transportation safety,
8 security, mobility, efficiency, and capacity needs and
9 accomplishes the goals under subsection (c).”;

10 (2) in paragraph (3)(C), by striking “; and”
11 and inserting a semicolon;

12 (3) by adding at the end the following:

13 “(5) Date-specific timetables for the partial and
14 complete implementation of planned Next Genera-
15 tion Air Transportation System capabilities, includ-
16 ing but not limited to Automated Dependent Surveil-
17 lance-Broadcast, Unmanned Aircraft Systems oper-
18 ations, Next Generation Enabled Weather system,
19 Next Generation Data Communications, NAS Voice
20 Switch, System Wide Information Management sys-
21 tem, and space weather information, and including
22 any necessary certification activities, and including
23 an evaluation of the costs and benefits of accel-
24 erating any of the implementation and certification
25 timetables;

1 “(6) Identification of planned demonstration
2 projects and date-specific timetables for the conduct
3 of the demonstration projects and subsequent certifi-
4 cation activities and an evaluation of the costs and
5 benefits of accelerating any of the demonstration
6 projects and certification activities;

7 “(7) Date-specific timetables for meeting the
8 environmental requirements identified in subsection
9 (I); and

10 “(8) Identification, on an annual basis, of each
11 entity that will be responsible for each component of
12 any research, development, or implementation activ-
13 ity.”.

14 (d) ANNUAL REPORT.—Section 709(d) of the Vision
15 100—Century of Aviation Reauthorization Act (49 U.S.C.
16 40101 note) is amended to read as follows:

17 “(d) ANNUAL REPORTS.—The Director of the Office
18 shall transmit a report annually to the Committee on
19 Science and Technology and the Committee on Transpor-
20 tation and Infrastructure of the House of Representatives
21 and the Committee on Commerce, Science, and Transpor-
22 tation of the Senate at the time of the President’s budget
23 request describing the progress in carrying out the plan
24 required under subsection (b) and any changes to that
25 plan. The annual report shall include—

1 “(1) the updated integrated plan developed
2 under subsection (b);

3 “(2) a detailed description of the progress made
4 in carrying out the integrated plan and any changes
5 made to that plan since the previous annual report,
6 and identifying any changes resulting from funding
7 shortfalls or limitations set by the Office of Manage-
8 ment and Budget;

9 “(3) any deviation from previously established
10 development and implementation milestones, the rea-
11 sons for the deviation, and the impact of the devi-
12 ation;

13 “(4) the relevant programs and activities for
14 the previous fiscal year and the proposed programs
15 and activities under the President’s budget request,
16 of each participating Federal agency and depart-
17 ment; and

18 “(5) the levels of funding for each participating
19 Federal agency and department devoted to the pro-
20 grams and activities in paragraph (4) for the pre-
21 vious fiscal year and under the President’s budget
22 request.”.

23 (e) SENIOR POLICY COMMITTEE.—Section 710 of the
24 Vision 100—Century of Aviation Reauthorization Act (49
25 U.S.C. 40101 note) is amended in the last sentence by

1 inserting “, and shall meet at least four times each year”
2 before the period.

3 (f) BUDGET PREPARATION.—

4 (1) Each Federal agency and department par-
5 ticipating in the office shall, as part of its annual re-
6 quest for appropriations to the Office of Manage-
7 ment and Budget, submit a report to the Office of
8 Management and Budget which—

9 (A) identifies each element of its work pro-
10 gram which contributes directly to Next Gen-
11 eration Air Transportation System initiative;
12 and

13 (B) states the portion of its request for ap-
14 propriations that is allocated to each such ele-
15 ment.

16 (2) The Office of Management and Budget
17 shall review each such report in light of the goals,
18 priorities, and agency and departmental responsibil-
19 ities set forth in the annual report submitted under
20 the amendment made by subsection (d), and shall
21 include, in the President’s annual budget estimate,
22 a statement of the portion of each appropriate agen-
23 cy’s or department’s annual budget estimate relating
24 to its activities undertaken pursuant to the Next
25 Generation Air Transportation System initiative.

1 (g) CONTINGENCY PLANNING.—The Director shall,
2 as part of the design of the Next Generation Air Transpor-
3 tation System, develop contingency plans for dealing with
4 the degradation of the Next Generation Air Transpor-
5 tation System in the event of a natural disaster, major
6 equipment failure, or act of terrorism.

7 (h) ENVIRONMENTAL RESEARCH.—The Director
8 shall establish environmental requirements for noise, emis-
9 sions, and energy consumption to be satisfied in the Next
10 Generation Air Transportation System through a com-
11 bination of technologies and operational procedures. The
12 Director shall assign primary responsibility for the re-
13 search, development, and demonstration of the applicable
14 technologies in a relevant environment to NASA and pri-
15 mary responsibility for demonstration of optimized oper-
16 ational procedures to the FAA.

17 (i) GOVERNMENT ACCOUNTABILITY OFFICE ASSESS-
18 MENT AND REPORT.—

19 (1) SCOPE.—The Comptroller General shall as-
20 sess compliance with the requirements of section 709
21 of the Vision 100—Century of Aviation Reauthoriza-
22 tion Act (49 U.S.C. 40101 note) to determine—

23 (A) the effectiveness of the Next Genera-
24 tion Air Transportation System Joint Planning
25 and Development Office in meeting the dead-

lines and milestones of the integrated plan under that section; and

(B) the adequacy and effectiveness of the memoranda of understanding executed by Federal departments and agencies under that section.

(2) REPORT.—Not later than 270 days after the date of enactment of this Act, and annually thereafter until the Next Generation Air Transportation System is fully operational, the Comptroller General shall transmit a report to the Committee on Science and Technology and the Committee on Transportation and Infrastructure of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate containing the Comptroller General’s findings, conclusions and recommendations related to the assessment in paragraph (1).

(j) UNMANNED AIRCRAFT SYSTEMS.—

(1) RESEARCH INITIATIVE.—

(A) IMPROVED MANNED AND UNMANNED AIRCRAFT.—Section 44504 of title 49, United States Code, is amended—

(i) in subsection (a), by inserting “unmanned and manned” after “improve”;

1 (ii) in subsection (b)(6), by striking
2 “and” after the semicolon;

3 (iii) in subsection (b)(7) by striking
4 the period and inserting “; and”; and

5 (iv) by adding at the end of sub-
6 section (b) the following:

7 “(8) in conjunction with other Federal agencies
8 as appropriate, to develop technologies and methods
9 to assess the risk of and prevent defects, failures,
10 and malfunctions of products, parts, and processes,
11 for use in all classes of unmanned aerial systems
12 that could result in a catastrophic failure.”.

13 (B) SYSTEMS, PROCEDURES, FACILITIES,
14 AND DEVICES.—Section 44505(b) of such title
15 is amended—

16 (i) in paragraph (4), by striking
17 “and” after the semicolon;

18 (ii) in paragraph (5)(C), by striking
19 the period and inserting a semicolon; and

20 (iii) by adding at the end of sub-
21 section (b) the following:

22 “(6) to develop a better understanding of the
23 relationship between human factors and unmanned
24 aircraft systems safety; and

1 “(7) to develop dynamic simulation models for
2 integrating all classes of unmanned aircraft systems
3 into the national airspace system.”.

4 (2) ROADMAP.—Not later than 90 days after
5 the date of enactment of this Act, the Administrator
6 shall develop and transmit an unmanned aircraft
7 systems research, development, demonstration and
8 implementation “roadmap” to the Committee on
9 Science and Technology of the House of Representa-
10 tives and the Committee on Commerce, Science, and
11 Transportation of the Senate.

12 (3) INDEPENDENT ASSESSMENT.—

13 (A) IN GENERAL.—Not later than 3
14 months after the date of enactment of this Act,
15 the Administrator shall enter into an arrange-
16 ment with the National Research Council for an
17 assessment of the status of unmanned aircraft
18 systems that shall include consideration of—

19 (i) human factors regarding un-
20 manned aircraft systems operation;

21 (ii) “detect, sense and avoid tech-
22 nologies” with respect to both cooperative
23 and non-cooperative aircraft;

24 (iii) spectrum issues and bandwidth
25 requirements;

- 1 (iv) operation in suboptimal winds
- 2 and adverse weather conditions;
- 3 (v) mechanisms for communicating
- 4 unmanned aircraft system location;
- 5 (vi) airworthiness and system redun-
- 6 dancy;
- 7 (vii) flight termination systems for
- 8 safety and security;
- 9 (viii) technologies for unmanned air-
- 10 craft systems flight control;
- 11 (ix) technologies for unmanned air-
- 12 craft systems propulsion;
- 13 (x) unmanned aircraft systems oper-
- 14 ator qualifications, medical standards, and
- 15 training requirements;
- 16 (xi) unmanned aircraft systems main-
- 17 tenance requirements and training require-
- 18 ments;
- 19 (xii) any other unmanned aircraft sys-
- 20 tems-related issue the Administrator be-
- 21 lieves should be addressed; and
- 22 (xiii) recommendations for integrating
- 23 unmanned aircraft systems into the na-
- 24 tional airspace system in a timely manner.

1 (B) REPORT.—Not later than 12 months
2 after initiating the study, the National Academy
3 shall submit its report to the Administrator, the
4 Senate Committee on Commerce, Science, and
5 Transportation, and the House of Representa-
6 tives Committee on Science and Technology
7 containing its finding and recommendations.

8 (4) PILOT PROJECTS FOR TRANSITIONING RE-
9 SEARCH AND DEVELOPMENT RESULTS.—

10 (A) IN GENERAL.—The Administrator
11 shall establish pilot projects in sparsely popu-
12 lated, low-density Class G air traffic airspace to
13 conduct experiments and collect data in order
14 to accelerate the safe integration of unmanned
15 aircraft systems into the national airspace sys-
16 tem.

17 (B) USE OF PUBLIC-PRIVATE PARTNER-
18 SHIP.—In conducting the pilot projects, the Ad-
19 ministrator shall encourage the formation of a
20 public-private partnership.

21 (C) REPORT.—Not later than 90 days
22 after completing the pilot projects, the Adminis-
23 trator shall transmit a report to the Committee
24 on Science and Technology of the House of
25 Representatives and the Committee on Com-

1 merce, Science, and Transportation of the Sen-
 2 ate, setting forth the Administrator's findings
 3 and conclusions concerning the projects.

4 (D) AUTHORIZATION OF APPROPRIA-
 5 TIONS.—In addition to amounts authorized to
 6 be appropriated by the amendments made by
 7 this Act, there is authorized to be appropriated
 8 to the Administrator for fiscal years 2008 and
 9 2009 such sums as may be necessary to carry
 10 out the pilot projects under this paragraph.

11 **SEC. 5. INTERAGENCY RESEARCH INITIATIVE ON THE IM-**
 12 **PACT OF AVIATION ON THE CLIMATE.**

13 (a) IN GENERAL.—The Administrator, in coordina-
 14 tion with NASA and the United States Climate Change
 15 Science Program, shall establish a research initiative to
 16 assess the impact of aviation on the climate and to evalu-
 17 ate approaches to mitigate that impact.

18 (b) RESEARCH PLAN.—Not later than 1 year after
 19 the date of enactment of this Act, the participating Fed-
 20 eral entities shall jointly develop a plan for the research
 21 program that contains the objectives, proposed tasks, mile-
 22 stones, and 5-year budgetary profile.

23 (c) REVIEW.—The Administrator shall have the Na-
 24 tional Research Council conduct an independent review of
 25 the interagency research program plan and provide the re-

1 sults of that review to the Committee on Science and
2 Technology of the House of Representatives and the Com-
3 mittee on Commerce, Science, and Transportation of the
4 Senate not later than 18 months after the date of enact-
5 ment of this Act.

6 (d) AUTHORIZATION OF APPROPRIATIONS.—In addi-
7 tion to amounts authorized to be appropriated by the
8 amendments made by this Act, there is authorized to be
9 appropriated \$2,000,000 for fiscal year 2008, and
10 \$5,000,000 in each of the fiscal years 2009 through 2011,
11 for the interagency research program established under
12 this section.

13 **SEC. 6. RESEARCH PROGRAM ON RUNWAYS.**

14 (a) ESTABLISHMENT OF RESEARCH PROGRAM.—The
15 Administrator shall establish a program of research grants
16 to universities and non-profit research foundations for re-
17 search and technology demonstrations related to—

18 (1) improved runway surfaces; and

19 (2) engineered material restraining systems for
20 runways at both general aviation airports and air-
21 ports with commercial air carrier operations.

22 (b) AUTHORIZATION OF APPROPRIATIONS.—In addi-
23 tion to amounts authorized to be appropriated by the
24 amendments made by this Act, there is authorized to be

1 appropriated \$5,000,000 for each of the fiscal years 2008
2 through 2011 to carry out this section.

3 **SEC. 7. RESEARCH ON DESIGN FOR CERTIFICATION.**

4 (a) JOINT PROGRAM.—Not later than 6 months after
5 the date of enactment of this Act, the FAA and NASA
6 shall establish a joint research program on methods to im-
7 prove both confidence in and the timeliness of certification
8 of new technologies for their introduction into the national
9 airspace system.

10 (b) RESEARCH PLAN.—Not later than 1 year after
11 the date of enactment of this Act, as part of the activity
12 described in subsection (a), the FAA and NASA shall
13 jointly develop a plan for the research program that con-
14 tains the objectives, proposed tasks, milestones, and five-
15 year budgetary profile.

16 (c) REVIEW.—The Administrator shall have the Na-
17 tional Research Council conduct an independent review of
18 the joint research program plan and provide the results
19 of that review to the Committee on Science and Tech-
20 nology of the House of Representatives and the Committee
21 on Commerce, Science, and Transportation of the Senate
22 not later than 18 months after the date of enactment of
23 this Act.

1 **SEC. 8. CENTERS OF EXCELLENCE.**

2 (a) AMENDMENT.—Section 44513(f) of title 49,
3 United States Code, is amended to read as follows:

4 “(f) GOVERNMENT’S SHARE OF COSTS.—The United
5 States Government’s share of establishing and operating
6 the center and all related research activities that grant
7 recipients carry out shall not exceed 75 percent of the
8 costs. The United States Government’s share of an indi-
9 vidual grant under this section shall not exceed 90 percent
10 of the costs.”.

11 (b) ANNUAL REPORT.—The Administrator shall
12 transmit a report annually to the Committee on Science
13 and Technology of the House of Representatives and the
14 Committee on Commerce, Science, and Transportation of
15 the Senate at the time of the President’s budget request
16 that lists—

17 (1) the research projects that have been initi-
18 ated by each Center of Excellence in the preceding
19 year;

20 (2) the amount of funding for each research
21 project and the funding source;

22 (3) the institutions participating in each project
23 and their shares of the overall funding for each re-
24 search project; and

25 (4) the level of cost-sharing for each research
26 project.

1 **SEC. 9. AIRPORT COOPERATIVE RESEARCH PROGRAM.**

2 Section 44511(f) of title 49, United States Code, is
3 amended—

4 (1) in paragraph (1), by striking “establish a 4-
5 year pilot” in paragraph (1) and inserting “maintain
6 an”; and

7 (2) in paragraph (4)—

8 (A) by striking “expiration of the pro-
9 gram” and inserting “expiration of the pilot
10 program”; and

11 (B) by striking “program, including rec-
12 ommendations as to the need for establishing a
13 permanent airport cooperative research pro-
14 gram” and inserting “program”.

15 **SEC. 10. RESEARCH GRANTS PROGRAM INVOLVING UNDER-**
16 **GRADUATE STUDENTS.**

17 (a) IN GENERAL.—The Administrator shall establish
18 a program to utilize colleges and universities, including
19 Historically Black Colleges and Universities, Hispanic
20 Serving Institutions, tribally controlled colleges and uni-
21 versities, and Alaska Native and Native Hawaiian serving
22 institutions in conducting research by undergraduate stu-
23 dents on subjects of relevance to the FAA. Grants may
24 be awarded under this section for—

25 (1) research projects to be carried out primarily
26 by undergraduate students;

1 (2) research projects that combine under-
 2 graduate research with other research supported by
 3 the FAA;

4 (3) research on future training requirements re-
 5 lated to projected changes in regulatory require-
 6 ments for aircraft maintenance and power plant li-
 7 censees; and

8 (4) research on the impact of new technologies
 9 and procedures, particularly those related to aircraft
 10 flight deck and air traffic management functions,
 11 and on training requirements for pilots and air traf-
 12 fic controllers.

13 (b) AUTHORIZATION OF APPROPRIATIONS.—In addi-
 14 tion to amounts authorized to be appropriated by the
 15 amendments made by this Act, there is authorized to be
 16 appropriated \$5,000,000 for each of the fiscal years 2008
 17 through 2011, for research grants under this section.

18 **SEC. 11. BUDGET FORMULATION.**

19 Section 48102 of title 49, United States Code, is
 20 amended by inserting after subsection (f) the following
 21 new subsection:

22 “(g) BUDGET FORMULATION.—(1) The Department
 23 of Transportation’s annual budget request for the Federal
 24 Aviation Administration shall identify all of the activities
 25 carried out by the Administration within the categories of

1 basic research, applied research, and development, as clas-
 2 sified by the Office of Management and Budget Circular
 3 A-11. Each activity in the categories of basic research,
 4 applied research, and development shall be identified re-
 5 gardless of the budget category in which it appears in the
 6 budget request.

7 “(2) The budget request specified in paragraph (1)
 8 shall be submitted to the Committee on Science and Tech-
 9 nology and the Committee on Transportation and Infra-
 10 structure of the House of Representatives and the Com-
 11 mittee on Commerce, Science, and Transportation of the
 12 Senate at the same time as the President’s Budget Re-
 13 quest is submitted to the Congress.”.

14 **SEC. 12. RESEARCH PROGRAM ON SPACE WEATHER AND**
 15 **AVIATION.**

16 (a) ESTABLISHMENT.—From amounts made avail-
 17 able under section 48102(a) of title 49, United States
 18 Code, the Administrator of the Federal Aviation Adminis-
 19 tration shall, in coordination with the National Science
 20 Foundation, National Aeronautics and Space Administra-
 21 tion, National Oceanic and Atmospheric Administration,
 22 and other relevant agencies, initiate a research program
 23 to—

24 (1) conduct or supervise research projects on
 25 impacts of space weather to aviation, including com-

1 munication, navigation, avionic systems, and on air-
2 line passengers and personnel; and

3 (2) facilitate the transfer of technology from
4 space weather research programs to Federal agen-
5 cies with operational responsibilities and to the pri-
6 vate sector.

7 (b) USE OF GRANTS OR COOPERATIVE AGREE-
8 MENTS.—The Administrator may use grants or coopera-
9 tive agreements in carrying out this section.

10 (c) AUTHORIZATION OF APPROPRIATIONS.—In addi-
11 tion to amounts authorized to be appropriated by the
12 amendments made by this Act, there is authorized to be
13 appropriated \$1,000,000 for each of the fiscal years 2008
14 through 2011 to carry out this section.

15 **SEC. 13. AVIATION GAS RESEARCH AND DEVELOPMENT**
16 **PROGRAM.**

17 (a) CONTINUATION OF PROGRAM.—The Adminis-
18 trator, in coordination with the NASA Administrator,
19 shall continue research and development activities into
20 technologies for modification of existing general aviation
21 piston engines to enable their safe operation using un-
22 leaded aviation fuel.

23 (b) ROADMAP.—Not later than 120 days of the enact-
24 ment of this Act, the Administrator shall develop a re-
25 search and development roadmap for the program contin-

1 ued in subsection (a), containing the specific research and
2 development objectives and anticipated timetable for
3 achieving the objectives.

4 (c) REPORT.—Not later than 130 days of the enact-
5 ment of this Act, the Administrator shall provide the road-
6 map specified in subsection (b) to the Committee on
7 Science and Technology of the House of Representatives
8 and the Committee on Commerce, Science, and Transpor-
9 tation of the Senate.

10 (d) AUTHORIZATION OF APPROPRIATIONS.—In addi-
11 tion to amounts authorized to be appropriated by the
12 amendments made by this Act, there is authorized to be
13 appropriated \$750,000 for each of the fiscal years 2008
14 through 2010, to carry out this section.

15 **SEC. 14. RESEARCH REVIEWS AND ASSESSMENTS.**

16 (a) REVIEW OF FAA’S ENERGY- AND ENVIRONMENT-
17 RELATED RESEARCH PROGRAMS.—

18 (1) STUDY.—The Administrator shall enter into
19 an arrangement with the National Research Council
20 for a review of the FAA’s energy- and environment-
21 related research program. The review shall assess
22 whether—

23 (A) the programs have well-defined,
24 prioritized, and appropriate research objectives;

1 (B) the program are properly coordinated
2 with the energy- and environment-related re-
3 search programs of NASA, NOAA, and other
4 relevant agencies;

5 (C) the program have allocated appropriate
6 resources to each of the research objectives; and

7 (D) there exist suitable mechanisms for
8 transitioning the research results into the
9 FAA's operational technologies and procedures
10 and certification activities.

11 (2) REPORT.—A report containing the results
12 of the review shall be provided to the Committee on
13 Science and Technology of the House of Representa-
14 tives and the Committee on Commerce, Science, and
15 Transportation of the Senate within eighteen months
16 of the enactment of this Act.

17 (b) ASSESSMENT OF THE IMPACT OF SPACE WEATH-
18 ER ON AVIATION.—

19 (1) STUDY.—The Administrator shall enter into
20 an arrangement with the National Research Council
21 for a study of the impacts of space weather on the
22 current and future United States aviation industry,
23 and in particular, to examine the risks for Over-The-
24 Pole (OTP) and Ultra-Long-Range (ULR) oper-
25 ations. The study shall—

1 (A) examine space weather impacts on at
2 least the following areas: communications, navi-
3 gation, avionics, and human health in flight;

4 (B) assess the benefits of space weather in-
5 formation and services to reduce aviation costs
6 and maintain safety;

7 (C) provide recommendations on how
8 NASA, NOAA, and the NSF can most effec-
9 tively carry out research and monitoring activi-
10 ties related to space weather and aviation; and

11 (D) provide recommendations on how to
12 integrate space weather information into the
13 Next Generation Air Transportation System.

14 (2) REPORT.—A report containing the results
15 of the study shall be provided to the Committee on
16 Science and Technology of the House of Representa-
17 tives and the Committee on Commerce, Science, and
18 Transportation of the Senate not later than 1 year
19 after the date of enactment of this Act.

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